EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

ORIGINAL (Red)

| REGION | SITE NUMBER (To be assigned by EPA) |
|---|---|
| III | PAD980551644 |

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

PA-784

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II *(Preliminary Assessment)*. File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

## I. SITE IDENTIFICATION

**A. SITE NAME:** Riders Disposal Area

**B. STREET (or other identifier):** East Bank of Hinkston Run

**C. CITY:** East Taylor Twp

**D. STATE:** PA

**E. ZIP CODE:** 15907

**F. COUNTY NAME:** Cambria

**G. OWNER/OPERATOR (If known)**

1. NAME: Bethlehem Steel Corp., 119 Walnut St., Johnstown PA 15907

2. TELEPHONE NUMBER: 814-533-7774

**H. TYPE OF OWNERSHIP**

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

**I. SITE DESCRIPTION:** Steep stream valley used as an industrial waste disposal site by Bethlehem Steel Corp. (Also the landowner) for more than 50 years.

**J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.):** Company notified state. State inspections date back to →

**K. DATE IDENTIFIED (mo., day, & yr.):** Nov. 18, 1969

**L. PRINCIPAL STATE CONTACT**

1. NAME: William R. Shawley - Solid Waste Specialist

2. TELEPHONE NUMBER: 814-472-5081

## II. PRELIMINARY ASSESSMENT *(complete this section last)*

**A. APPARENT SERIOUSNESS OF PROBLEM**

☐ 1. HIGH ☒ 2. MEDIUM ☐ 3. LOW ☐ 4. NONE ☐ 5. UNKNOWN

**B. RECOMMENDATION**

☐ 1. NO ACTION NEEDED *(no hazard)*

☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: _____
b. WILL BE PERFORMED BY: _____

☒ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR: Dec. 83
b. WILL BE PERFORMED BY: William Shawley

☐ 4. SITE INSPECTION NEEDED *(low priority)*

**C. PREPARER INFORMATION**

| 1. NAME | 2. TELEPHONE NUMBER | 3. DATE (mo., day, & yr.) |
|---|---|---|
| William R. Shawley - Solid Waste Specia | 814-472-5081 | 11-30-83 |

## III. SITE INFORMATION

**A. SITE STATUS**

☒ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if infrequently.)* Present active area about 13 acres

☐ 2. INACTIVE *(Those sites which no longer receive wastes.)* Inactive area about 235 acres.

☐ 3. OTHER *(specify):* _____ *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for disposal has occurred.)*

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**B. IS GENERATOR ON SITE?**

☒ 1. NO ☐ 2. YES *(specify generator's four-digit SIC Code):* _____

**C. AREA OF SITE (In acres):** Approximately 250 acres Used for disposal

**D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES**

1. LATITUDE (deg.-min.-sec.): 40° 21′ 30″ Center of site

2. LONGITUDE (deg.-min.-sec.): 78° 54′ 10″

**E. ARE THERE BUILDINGS ON THE SITE?**

☐ 1. NO ☒ 2. YES *(specify):* one small maintenance building.



Continue On Reverse

Continued From Front

ORIGINAL (Red)

## IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

| X | A. TRANSPORTER |
|---|---|
| | 1. RAIL |
| | 2. SHIP |
| | 3. BARGE |
| X | 4. TRUCK |
| | 5. PIPELINE |
| | 6. OTHER (specify): |

| X | B. STORER |
|---|---|
| X | 1. PILE 5 acres |
| | 2. SURFACE IMPOUNDMENT |
| | 3. DRUMS |
| | 4. TANK, ABOVE GROUND |
| | 5. TANK, BELOW GROUND |
| | 6. OTHER (specify): |

| X | C. TREATER |
|---|---|
| | 1. FILTRATION |
| | 2. INCINERATION |
| | 3. VOLUME REDUCTION |
| | 4. RECYCLING/RECOVERY |
| | 5. CHEM./PHYS. TREATMENT |
| | 6. BIOLOGICAL TREATMENT |
| | 7. WASTE OIL REPROCESSING |
| | 8. SOLVENT RECOVERY |
| | 9. OTHER (specify): |

| X | D. DISPOSER |
|---|---|
| X | 1. LANDFILL (permit application) |
| | 2. LANDFARM |
| | 3. OPEN DUMP |
| | 4. SURFACE IMPOUNDMENT |
| | 5. MIDNIGHT DUMPING |
| | 6. INCINERATION |
| | 7. UNDERGROUND INJECTION |
| X | 8. OTHER (specify): Waste Pickle Liquor Dumping area, 7 acres Discontinued Jan. 83 |

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

Waste piles are currently being used for storage of K061, K062, D002, D006, and D008 along with other hazardous wastes no longer being generated. Ferromanganese slag was disposed of in landfill until 77, no longer generated.

## V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1. UNKNOWN ☒ 2. LIQUID ☒ 3. SOLID ☒ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1. UNKNOWN ☒ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4. RADIOACTIVE ☐ 5. HIGHLY VOLATILE
☒ 6. TOXIC ☐ 7. REACTIVE ☐ 8. INERT ☐ 9. FLAMMABLE

☒ 10. OTHER (specify): Steel mill slag

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.
From 1980 till 1983 all hazardous waste transported to Riders was manifested. Estimates of total waste dumped on site prior to 1980 were made from reports of monthly generation.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

| a. SLUDGE | b. OIL | c. SOLVENTS | d. CHEMICALS | e. SOLIDS | f. OTHER |
|---|---|---|---|---|---|
| AMOUNT 1,200000 | AMOUNT | AMOUNT | AMOUNT 1,000,000 | AMOUNT 1,200,000 | AMOUNT |
| UNIT OF MEASURE NS Total | UNIT OF MEASURE | UNIT OF MEASURE | UNIT OF MEASURE Tons dumped since 1967 | UNIT OF MEASURE Tons Total | UNIT OF MEASURE |
| ☐ (1) PAINT, PIGMENTS | ☐ (1) OILY WASTES | ☐ (1) HALOGENATED SOLVENTS | ☐ (1) ACIDS | ☐ (1) FLYASH | ☐ (1) LABORATORY PHARMACEUT. |
| ☐ (2) METALS SLUDGES | ☐ (2) OTHER (specify): | ☐ (2) NON-HALOGNTD SOLVENTS | ☒ (2) PICKLING LIQUORS | ☐ (2) ASBESTOS | ☐ (2) HOSPITAL |
| ☐ (3) POTW | | ☐ (3) OTHER (specify): | ☐ (3) CAUSTICS | ☐ (3) MILLING/ MINE TAILINGS | ☐ (3) RADIOACTIVE |
| ☐ (4) ALUMINUM SLUDGE | | | ☐ (4) PESTICIDES | ☐ (4) FERROUS SMLTG. WASTES | ☐ (4) MUNICIPAL |
| ☒ (5) OTHER (specify): Fe Mn sludge averaging 2000 ppm CN dumped from "67" to "77" | | | ☐ (5) DYES/INKS | ☐ (5) NON-FERROUS SMLTG. WASTES | ☐ (5) OTHER (specify): |
| | | | ☐ (6) CYANIDE | ☒ (6) OTHER (specify): Fe Mn Slag dumped from "67" to "77" | |
| | | | ☐ (7) PHENOLS | | |
| | | | ☐ (8) HALOGENS | | |
| | | | ☐ (9) PCB | | |
| | | | ☐ (10) METALS | | |
| | | | ☐ (11) OTHER (specify): | | |

Continued From Page 2

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## V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

1). Fe Mn sludges containing 0.2% CN
2). [redacted] Dusts and sludges containing Fe, Pb, Cd, disposed of in landfill without impermeable base. Also Coal Tar sludge.
3). waste acids dumped in highly permeable slag fill area.

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

DER and Bethlehem Steel Corp. are currently working on a consent order to address the waste piles, [redacted] the unpermitted Class III landfill, and the mill scale ponds at Ryder's. Monitoring data is now being accumulated.

## VI. HAZARD DESCRIPTION

| A. TYPE OF HAZARD | B. POTENTIAL HAZARD (mark 'X') | C. ALLEGED INCIDENT (mark 'X') | D. DATE OF INCIDENT (mo., day, yr.) | E. REMARKS |
|---|---|---|---|---|
| 1. NO HAZARD | | | | |
| 2. HUMAN HEALTH | X | | | |
| 3. NON-WORKER INJURY/EXPOSURE | | | | |
| 4. WORKER INJURY | | | | |
| 5. CONTAMINATION OF WATER SUPPLY | | | | |
| 6. CONTAMINATION OF FOOD CHAIN | | | | |
| 7. CONTAMINATION OF GROUND WATER | X | | | |
| 8. CONTAMINATION OF SURFACE WATER | X | | | |
| 9. DAMAGE TO FLORA/FAUNA | | | | |
| 10. FISH KILL | | | | |
| 11. CONTAMINATION OF AIR | | | | |
| 12. NOTICEABLE ODORS | | | | |
| 13. CONTAMINATION OF SOIL | | | | |
| 14. PROPERTY DAMAGE | | | | |
| 15. FIRE OR EXPLOSION | | | | |
| 16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS | | | | |
| 17. SEWER, STORM DRAIN PROBLEMS | | | | |
| 18. EROSION PROBLEMS | | | | |
| 19. INADEQUATE SECURITY | | | | |
| 20. INCOMPATIBLE WASTES | | | | |
| 21. MIDNIGHT DUMPING | | | | |
| 22. OTHER (specify): | | | | |

## VII. PERMIT INFORMATION

ORIGINAL (Red)

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

- ☐ 1. NPDES PERMIT
- ☐ 2. SPCC PLAN
- ☐ 3. STATE PERMIT (specify):
- ☐ 4. AIR PERMITS
- ☐ 5. LOCAL PERMIT
- ☐ 6. RCRA TRANSPORTER
- ☒ 7. RCRA STORER Part B submitted.
- ☐ 8. RCRA TREATER
- ☐ 9. RCRA DISPOSER
- ☒ 10. OTHER (specify): Application for permit for secure land fill at Riders.

B. IN COMPLIANCE?

- ☐ 1. YES
- ☒ 2. NO
- ☐ 3. UNKNOWN

waste Pile storage longer than one year. Not on impermeable base, not protected from precipitation or wind.

4. WITH RESPECT TO (list regulation name & number): Chap. 75.265 (t) Leachate not collected.

## VIII. PAST REGULATORY ACTIONS

☐ A. NONE ☒ B. YES (summarize below)

Consent Order of 6-22-82 discontinued disposal of waste pickle liquor at Riders Jan. 83. Ferromanganese pit closed by consent decree 9-6-79.

## IX. INSPECTION ACTIVITY (past or on-going)

☐ A. NONE ☒ B. YES (complete items 1,2,3, & 4 below)

| 1. TYPE OF ACTIVITY | 2. DATE OF PAST ACTION (mo., day, & yr.) | 3. PERFORMED BY: (EPA/State) | 4. DESCRIPTION |
|---|---|---|---|
| RCRA Inspection | 10-26-83 | State | Haz. waste inspection of waste pile Records Check. |
| Groundwater Monitoring | 8-22-83 | EPA & State | Sampled groundwater wells |
| RCRA Inspection | 7-20-83 | State | Haz. waste inspection of Riders Also checked records. |

## X. REMEDIAL ACTIVITY (past or on-going)

☐ A. NONE ☒ B. YES (complete items 1, 2, 3, & 4 below)

| 1. TYPE OF ACTIVITY | 2. DATE OF PAST ACTION (mo., day, & yr.) | 3. PERFORMED BY: (EPA/State) | 4. DESCRIPTION |
|---|---|---|---|
| Consent Order & Agreement | Now Pending | State DER | Closure of slag-acid neutralization area Closure of waste Pile and Mill Scale Pond |
| Consent Order & Agreement | 6-22-82 | State DER | Discontinuation of waste pickle liquor disposal at Riders. |
| Consent Decree & Agreement | 9-6-79 | DER & EPA | Closure Plan for Ferro manganese pit at Riders |

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment (Section II) information on the first page of this form.

FIELD TRIP SUMMARY REPORT

ORIGINAL (Red)

This summary should be prepared in conjunction with the Preliminary Assessment Form, (EPA Form T2070-2), so that a proper site rating can be assigned.

Name of Site Bethlehem Steel Corp. Riders Disposal Area

EPA Case Number PAD 980 55 1643 PA-784

I. If site is active, has owner/operator notified EPA in accordance with Section 3010 of RCRA. Yes X No

If Yes: a) Note EPA I.D. No. PAD 004344222

b) Is the site a generator, (storer) treater or disposer of hazardous waste? (CIRCLE ONE). Permit application for a secure landfill also at Riders. (See Part B).

II. If the answers submitted in Part VI (Hazard Description) of EPA Form T2070-2 or observations warrant a more thorough site investigation/sampling, please attach a sketch map showing those areas of concern. (i.e.: lagoons, leachate seeps, drum storage, monitoring wells, etc.).

III. Please list site contacts and accompanying inspectors; include name, title and phone numbers. T. J. Gallis, Supt. of Utilities and Services, 814-533-7774 Beth. Steel Corp.

Mary Bloom, Lab Supervisor, 814-533-7103

DER Solid Waste Specialist - William Shawley 814-472-5081

IV. Site observations: (attach a topo map).

A. Population within 1000 ft. of the site is (CHECK ONE)

1. 0-10 people
(2) 10-100 people
3. greater than 100 people

B. List surrounding land use: (woodlot, agricultrual, playground, industrial,etc.)

North: Woodlot - Hinkston Run Reservoir

South: Woodlot

East: Woodlot - ~½ mile residential

West: Woodlot - Hinkston Run

C. Water supply for area. (CHECK ONE)

1. Surface intakes (locate on attached map)
2. Municipal wells (locate on attached map)
(3.) Domestic wells:

a. Approximate number within ½ mile. 2
b. Locate a minimum of 3 wells on attached map and list below:

| | | | |
|---|---|---|---|
| Property owner | Unknown at Present Time | | |
| Address | | | |
| Phone No. | | | |
| Well records | YES___ NO___ | YES___ NO___ | YES___ NO___ |
| Odor problems | YES___ NO___ | YES___ NO___ | YES___ NO___ |
| Taste problems | YES___ NO___ | YES___ NO___ | YES___ NO___ |

c. If odor or taste problems are reported please elaborate:

D. Are surface or subsurface, (leachate), drainage areas from site apparent? YES X NO___. If yes: leachate seeps were noted in 1975. No recent investigation since Fe Mn pit closed and acid dumping ceased

1. Were unusual odors or stains noted? YES X NO___
2. Was stressed vegetation noted? YES X NO___

a. If yes please note area on map.

E. Are streams or receiving waters adjacent to site? YES X NO___
If yes, list observations: (i.e.-change in benthic community, change in plant density/diversity, change in color, siltation, etc.).

Stream studies done in "76" from sampling done in 73 and 75 indicated severe pollution problems in Hinckston Run which were attributed to site. No stream study done since Fe Mn pit was closed or since acid dumping was stopped

F. Site topography: (i.e.-plateau, strip mine ravines, etc.). Steep stream valley with up to 150 feet of fill consisting of coal waste and plant refuse.

G. Other observations: (i.e.-erosion, located in flood plain, etc.).

Dumping of plant waste and coal waste has created a wide relatively flat bench on the slope with a very steep side slope down to Hinckston Run.

V. Were photographs taken? YES ___ NO X
If yes: Who has custody of photos?

Name: _____

Agency: _____

Phone No.: _____

VI. Is a hydrogeological survey for this site attached? YES ___ NO X
If no, Section III D of EPA Form T2070-2 must be completed.

VII. Please attach pertinent copies of reports or data reviewed by inspector:
(i.e.-State monitoring data, consultant reports, etc.).

VIII. Name of Inspector: William R. Shawley - Solid Waste Specialist

Agency: Pennsylvania Dept of Env. Resources, Bur. of Solid Waste Mgmt

Phone No.: 814 - 472 - 5081

Time on Site: ~ 8 hours during last 3 inspections

Weather Conditions: Sunny and dry

Beth Steel
Cambria Co PA 28 ORIGINAL (Red)

# II. Waste Related Information

~~II. Characteristics of Site (Continued)~~

C. 2. Amounts of waste

Also at Riders are the following wastes:

1.) Mine refuse dumped prior to 1960 when Rosedale Mine was closed. - Probably several million tons.

2.) Brick, dirt, and plant cleanup waste (Non hazardous)
At least 1,000,000 Tons since 1967
Probably several million Tons Total.

3.) Coal Tar Decanter Sludge
Probably 6,000 Tons since 1976

4) Open Hearth Electrostatic Precipitator Dust
Approx. 72,000 Tons since 1976

5) Basic iron filter cake and dust
Approx. 84,000 Tons stockpiled as of 1976

6) Haz. Waste file since 1980 all manifested wastes - Totals
K061 - 11,000 Tons
K062 - 16,000 Tons
K087 - 515 Tons
D006 - 3850 Tons
D008 - 14,500 Tons

ORIGINAL
(Red)

COMMONWEALTH OF PENNSYLVANIA

May 13, 1976

PA-784

SUBJECT: Report of Field Investigation
Riders Disposal Area
Bethlehem Steel Corporation
East Taylor Township, Cambria County

TO:

Wilbur I. Taxis
Regional Solid Waste Director
Williamsport Regional Office

FROM:

William S. Hanczar
Regional Soil Scientist
Williamsport Regional Office

Dale P. Voykin
Regional Geologist
Williamsport Regional Office

Robert O. Young
Geologist
Lewistown Office

This report is written as an attempt to formalize some of the data obtained during several field investigations at the Bethlehem Steel Riders Disposal Area.

Riders Disposal Area, utilized by Bethlehem Steel Corporation (Johnstown) for the disposal of solid and liquid waste, is located along the east bank of Hinckston Run north-northeast of Johnstown. This site, approximately 2 miles in length, can be found on the Johnstown 7-1/2' quadrangle (7-8.3)--see Map #1.

The disposal site is situated on a steep hillside forming the east embankment of Hinckston Run. Over the years, filling at the Rider disposal site has developed three (3) distinct levels (level #1 at the bottom, level #2 midway, level #3 at the top).

Structurally, the site is located on the east limb, near the axis, of the Johnstown Syncline. Bedrock, gently dipping (N22E, 2W), consists of the Pennsylvanian Conemaugh Formation (cyclic sequences of red and gray shales and siltstones with thin limestones and coals).

Groundwater, on the east bank of Hinckston Run, moves in a westerly direction towards Hinckston Run because of topographic and structural controls.

Measurements at springs and a few dug wells upslope of the disposal area and just downslope of Headrick Union Cemetery indicate that perched conditions exist with water at or near the natural ground surface year-round. Because Hinckston Run is a regional discharge zone and because of permeability contrasts between the refuse and natural ground, all flow in the vicinity of the pile (perched or otherwise)must ultimately discharge to Hinckston Run. Since discontinuities in the perched zone at the contact at the base of the pile can exist, the only difference between perched flows from the pile and those flows entering the regional system is travel time and, perhaps, some dilution.

Soils at the site consist primarily of Ernest silt loam, typically deep and moderately well-drained, containing a fragipan or moderately slowly permeable layer at 18 to 36 inches and Summerhill-Gilpin very stony silt loam, typically deep and well-drained. The Ernest soils have developed in silty materials which have washed and/or slid from the uplands. The Summerhill-Gilpin soils have developed either in colluvium which has washed and/or slid from the uplands or in residuum from weathering shales, siltstones and fine-grained sandstones. Essentially, the entire site has been covered by the waste slag and/or coal refuse. Other soil types associated with the Gilpin Complex may well be present, exhibiting varying depths to bedrock and varying drainage conditions.

According to information received from Bethlehem Steel, there are five basic types of waste disposed of at the Rider site. They are as follows:

1. Coal Refuse
2. Blast Furnace, Ferromanganese Slag
3. Gas Cleaning Sludge (Ferromanganese Blast Furnace Filter Cake)
4. Waste Pickling Acid (pickling liquor)
5. Miscellaneous Material (liquid and solid)

Since the miscellaneous solid materials are largely composed of dirt and brick (with minor amounts of wood, paper, etc.), our major concern has been items 1 through 4. The disposal areas for these items are shown on Map #1.

For a typical analysis of these materials (with the exception of coal refuse), we excerpt the following material (submitted by Bethlehem Steel Corporation to Timothy J. Bratton on February 9 and 23, 1972):

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RIDERS AREA: January 1, 1971 - November 30, 1971

2. Blast Furnace, Ferromanganese Slag (None produced during August, September and October)

| | | Tons |
|---|---|---|
| a. | Amount produced | 72,500 |
| b. | Amount manganese metal recovered | 1,570 |
| c. | Amount recycled to furnace | 245 |
| d. | Amount to landfill | 70,685 |

e. Ferromanganese slag analysis - Typical % Dry Basis

| Component | % |
|---|---|
| $SiO_2$ | 24.3 |
| $Al_2O_3$ | 17.0 |
| CaO | 36.3 |
| MgO | 12.4 |
| MnO | 5.50 |
| S | 2.12 |
| $TiO_2$ | 0.45 |
| FeO | 0.47 |

3. Gas Cleaning Sludge - Ferromanganese Blast Furnace Filter Cake

| | | Tons |
|---|---|---|
| a. | Amount to landfill disposal (wet) (None produced during August, September and October because of furnace rebuild.) | 74,700 |

b. Filter Cake Analysis - Typical % Dry Basis

| Component | % |
|---|---|
| $SiO_2$ | 11.0 |
| CaO | 12.3 |
| MgO | 6.30 |
| $Al_2O_3$ | 8.92 |
| $Fe_2O_3$ | 1.89 |
| $K_2O$ | 3.40 |
| $Na_2O$ | 0.85 |
| ZnO | 1.35 |
| MnO | 23.63 |
| Ignition Loss | 25.03 |
| $SO_4$ | 4.64 |

4. Chemical Wastes - Waste Pickling Acid

Waste acid includes the following types of acid used and quantities disposed of by neutralization on slag:

| Waste Acid | Quantity, Tons | % of Total |
|---|---|---|
| Sulfuric | 79,500 | 90.5 |
| Hydrochloric | 4,218 | 9.5 |
| Total | 83,718 | 100.0 |

5.

a. Miscellaneous Materials (Solid)

| | Tons |
|---|---|
| 1) Scrap wood | 1,100 |
| 2) Paper, shavings, rags, etc. | 3,540 |
| 3) Dirt from plant clean-up, brick pieces, etc. | 58,400 |
| 4) Total | 63,040 |

Item "a" materials are covered by ferromanganese blast furnace filter cake.

b. Miscellaneous Plant Liquid Wastes - 2500 tons

This material is defined as slurry from the ferromanganese blast gas wash water recycle system. Occasionally filter cake production lags the amount of dust produced by the furnace and these solids accumulate in the thickeners. When this occurs, the excess thickener underflow is pumped into tank trucks and hauled to the disposal area where the slurry is drained onto slag. Mechanical repairs to the thickeners may be necessary. While such repairs are infrequent, the thickener must be drained. Since drainage to the stream cannot be permitted, the water is pumped into tank trucks for disposal on slag. Analysis of the water is attached. See Table #1.

We note in all past correspondence to the Department, that there has never been any written data as to the amount of coal refuse (if any) that is disposed of at this site. Further, the area designated for coal refuse on Map #1 has also been used for slag disposal.

From our observation, we offer the following description of methods of waste disposal:

1. Coal Refuse - We have not seen coal refuse being deposited at the site; however, in that area designated for coal refuse (see Map #1) the refuse stands at the angle of repose, is highly eroded, and lacks any apparent cover or vegetation.

2. Slag - This material is (presently) hauled to level #3 by rail and the cupolas are dumped over the side. No attempt at compaction or cover is made.

3. Filter Cake - This material is hauled in a liquid state by tank trucks to the northern end of level #3. It is poured into a large ravine which has been dammed(by slag) to prevent the material from flowing overland to Hinckston Run. This material ponds behind the slag dam, eventually dewaters, and dries to a rubber-like consistency. One can note the formation of interesting desiccation features, meander patterns, and natural levees in the resulting "mudflat".

4. Pickle Liquor - This material is hauled to the area designated for its disposal on level #3 by tank trucks. The pickle liquor disposal pits consist of shallow trenches, approximately 2-4 feet deep x a bulldozer blade wide x 30-40 feet long, excavated into the waste slag and lined with a thin layer of crushed limestone. The tank trucks back into the pits, open the valve at the back of the tanker, and discharge their contents. Generally, several pits are in use and, periodically, at some schedule we are unable to determine, they are abandoned, covered, and new pits are constructed. The disposal operation, therefore, shifts from the south-central portion of level #3 to the northcentral portion of level #3.

5. Miscellaneous Materials - Miscellaneous liquid waste is dumped in the filter cake area and miscellaneous solid waste (paper, etc.) is presumably incorporated with the waste slag dumping operation.

In an effort to determine what effect the Rider Disposal Area has on Hinckston Run, the writers have sampled this stream on various occasions since November 1973. On one such occasion, November 8, 1973, Hinckston Run was sampled jointly by the Department and representatives of Bethlehem Steel Corporation. The sampling point locations, shown on Map #2, are described on Table #2.

All samples requiring a heavy metals analysis were first fixed with concentrated $HNO_3$ in the field to lower the pH < 2 and all samples requiring cyanide analysis were first fixed with concentrated NaOH to raise the pH > 12, prior to shipment to the Department laboratory. Field pH measurements were accomplished with the use of both a Hach Color Comparator and a Leeds & Northrup electric pH meter (Model # 7417 ). Field specific conductivity readings were accomplished with the use of an Aquatronics

Conductivity Analyzer (Model 320). The results of these samplings are shown on graphs #1 through #16b and Tables #2 through #6.

Results, recorded in parts per million (ppm) or in parts per billion (ppb), were recorded on 5-cycle semi-logarithmic paper. Semi-log paper was chosen because of the wide range in values found which would be difficult to show on normal graph paper. It should be emphasized that each log cycle represents a 10-fold increase over the preceding cycle. Further, trace or lower limits were sometimes graphed differently for results obtained from the Department lab and those obtained from Bethlehem Steel's. For example, when our lab reported a lower limit of less than 50 ppb, the result was graphed at the base of the log-cycle (10 ppb); whereas, because of the manner in which Bethlehem Steel reported their lower limits, a result of less than 50 ppb was graphed one unit lower (40 ppb). This manner of graphing tended to smooth out the Bethlehem Steel curves.

Because of numerous constraints (lack of personnel, time, number of stations, number of samples per station, etc.), after the initial sampling (11/8/73), only those parameters we felt were absolutely necessary were sampled. In that process, some new parameters were added (e.g., As) in later sampling and some were deleted (e.g., Fe, Mn, Cl, nitrates, BOD, COD, phenols, etc.) Hindsight, superior to foresight, we now realize that most parameters should have been carried through from beginning to end--regardless of the burden on field or lab personnel. Further, it should be stressed that although some key parameters were sampled and requested, interference often prohibited analysis by the laboratory (e.g., cyanide and chlorides in waste pickle liquor).

Because of flow conditions (e.g., BS13, Table #6) and/or lack of time, all stations were not sampled during each succeeding sampling period. For these reasons, some portions of some graphs are only extrapolations and are indicated as such with (?).

The normal sampling points are numbered 22 through 1. Point 22 at the Hinckston Run Reservoir and Point 1 is at the first road bridge above the Conemaugh River, within the plant proper. There are also several waste samples, background samples and special stream and seep samples given numbers beyond 22. All sampling point locations and descriptions are listed on Table #2 and shown on Map #2.

Graphing of the sampling results (see graphs 1-16b) reveals distinct changes downstream of the Hinckston Run Reservoir. It becomes apparent that there is a minimum of three distinct patterns in the stream graphs--that area from BS33 to BS17, BS16 to BS2, and BS2 to BS1.

Generally, in the area from BS33 to BS17, sampling results reveal uniform conditions and relatively good water quality. West bank tributary samples (outlined in blue) tend to mirror the results of stream quality in this reach. For these reasons, we consider this area (BS33-BS17) and the west bank tribs to constitute background conditions. Further, at present, no disposal operations are carried out in this area--although, in the past, it was the site of slag disposal. In fact, leaching from these old slag areas could account for small peaks in some parameters in this stretch of stream.

That stretch of stream between BS16 and BS2 indicates obvious elevated levels for all parameters and indicates highly degraded water quality conditions in Hinckston Run. This stretch of stream is also the area where all waste from Bethlehem Steel, earmarked for the Riders Disposal Area, is placed along the east bank.

From observation of the general locations of waste disposal on Map #2, one would expect that the immediate effect of leaching from the filter cake disposal area would be in the vicinity of samples BS16 to BS14, and that from the pickle liquor in the vicinity of BS12-BS7. However, from actual observation of traceable waste flows (e.g., BS31), we know that considerable overlap in both directions (up and downstream) occurs. For example, on 7/24/75 we first observed a waterfall (BS31) entering Hinckston Run from the east bank (flow at 1330 hrs approximately 100 gpm). This flow was traced uphill to level #2, then 1,500 feet southward along the railroad tracks to the swamp on level #2--directly below the area of pickle liquor disposal on level #3 (at that time). Four hours later (1730 hrs), the flow at BS31 had decreased to a trickle. Results for samples taken on that day indicate fairly uniform concentrations of all parameters for samples BS31 (waterfall), BS34 (pickle liquor) and BS36 (swamp level #2), indicating that pickle liquor was short circuiting <u>through</u> level #3 to the swamp and then running overland across level #2 to discharge into Hinckston Run (BS32). At its point of entry (BS32), the stream changed from white to a blood red color. More importantly, this acid discharge was approximately 1,500 feet <u>upstream</u> (BS32) of the area expected (BS12) for an acid seep. Further, although such blatant discharges are not seen on every occasion, acid seeps (BS13) are noted beginning in the vicinity of the waterfall (whether dry or flowing) on every sampling occasion.

Obviously, with changing pickle liquor disposal pit locations, one can expect changes in acid seep concentrations along the east bank of Hinckston Run. For example, if the northern pickle disposal pits are used, one can expect higher concentrations in the upstream seeps (BS13 to BS37); whereas, when the southern disposal pits are used, one can expect higher concentrations downstream (BS12 to BS6). This point can best be demonstrated by observation of seeps BS6 and BS9. On 11/8/73 and 11/18/75 these seeps were

distinctly alkaline (pH 10-12). On 5/10/76, BS6 had a field pH of 3.2 (see graph #1) with an approximate point flow of 10 gpm. We believe that, with extended use of a disposal pit, piping occurs. When pit locations are changed, ground water passing through the alkaline slag and moving in pipes that formerly resulted in an acid seep could, presumably, result in an alkaline seep--hence, the high pHs at BS6 and BS9.

Piping occurs from the reaction of the acid pickle liquor reacting with the alkaline slag. As neutralization occurs, each subsequent load of acid extends the pipe development. Also, as neutralization occurs, some elements found in the pickle liquor are precipitated; whereas, other elements within the slag may go into solution. This process can explain variances in the chemistry of the seeps from BS13 to BS6.

The elevated parameters on the graphs, with respect to the disposal operations at the Rider site, appear to be substantiated by visual observation of the stream conditions from BS16 to BS2. Beginning at BS19, white seeps are noted along the east bank. By BS16, the stream has changed from clear in nature to a chalky white color, bank to bank. On some occasions (e.g., 7/24/75), the stream becomes beet red in the vicinity of station 13 (acute change). On other occasions (e.g., 5/10/76), during low flow periods, the stream takes on a slight green tinge in the vicinity of BS13 and becomes gradually darker downstream.

Beyond BS2, one notes (see graphs) a distinct drop in all parameters between stations BS2 and BS1. We attribute this decrease to dilution. Estimates of stream flow on 11/8/73 (floating ball, yardstick, and stopwatch) show an approximate four-fold increase in flow (1,150 gpm to 4,100 gpm) between BS2 and BS1. We feel that this increase is mainly due to cooling water discharges at the Bethlehem Steel plant. We must point out, however, that the concentration of most parameters, though lower than those at BS2, is well above that which would be allowed in a permitted discharge to the Conemaugh River (e.g., 5,160 ppb cyanide on 7/24/75).

SUMMARY AND CONCLUSIONS:

To date, Bethlehem Steel has maintained that, to the best of their knowledge, the method of pickling liquor disposal at the Riders Disposal Area, as well as their solid waste disposal, has not appreciably lowered the quality of Hinckston Run. Further, they have implied that the obvious degradation below the reservoir is due to acid mine drainage.

We feel that, based on physical observation, chemical data, and analysis of the parameters associated with a known mine discharge (BS3), this is not a problem due to acid mine drainage and the degraded conditions in Hinckston Run can be directly attributed to the waste disposal operations (solid and liquid) by Bethlehem Steel Corporation at the Riders Disposal Area.

Bethlehem Steel also maintains that their method of liquor disposal is a viable method, because of neutralization with the alkaline slag, of industrial waste disposal. Observation of any of the graphs reveals that this is not the case. Further, although some neutralization does occur at present, with continued use of this method of liquor disposal we are of the opinion that the slag dump will become so riddled by pipe development that the resultant effect will be even greater degradation of Hinckston Run.

Graphing of the sample parameters, generally, substantiates our opinion as to the source(s) of the pollutants in Hinckston Run. Some irregularities do appear but they can be due to:

1. sampling technique
2. instrumentation errors
3. laboratory errors
4. seasonal variations in ground water flow conditions and temperature
5. variations in waste characteristics and areas of disposal

We cannot explain the chemistry of some of the irregularities in the highly toxic elements (e.g., As, Cn, Pb) but their mere presence can be attributed to the waste disposal operations. Those parameters considered less toxic (e.g., Fe, Mn, $SO_4$, etc.) and easily sampled and analyzed show no irregularities and point directly to the waste disposal operations as their source.

To conclude, Bethlehem Steel Corporation waste disposal operations at the Riders Disposal Area are responsible for the polluted (in the strictest sense of the word) nature of Hinckston Run below the reservoir.

WSH:DPV:ROY:mm

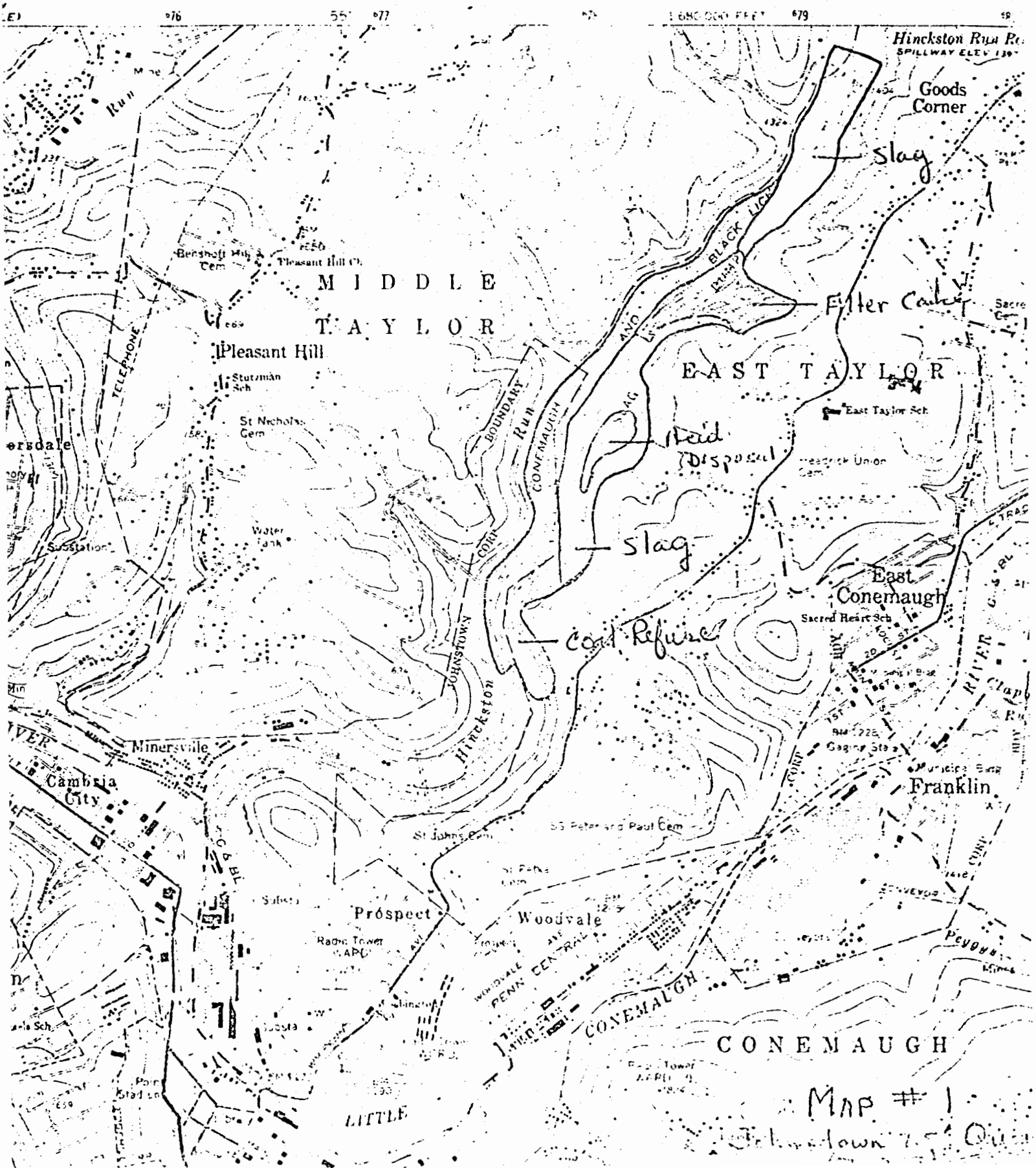
cc: Division of Industrial Waste (BWQM) — Mr. Arnold, BWQM Lab
Division of Solid Waste Management — Mr. Bossert
Ground Water Section — Mr. Gumno
Soils Section — Mr. Neal

Attachments (36)

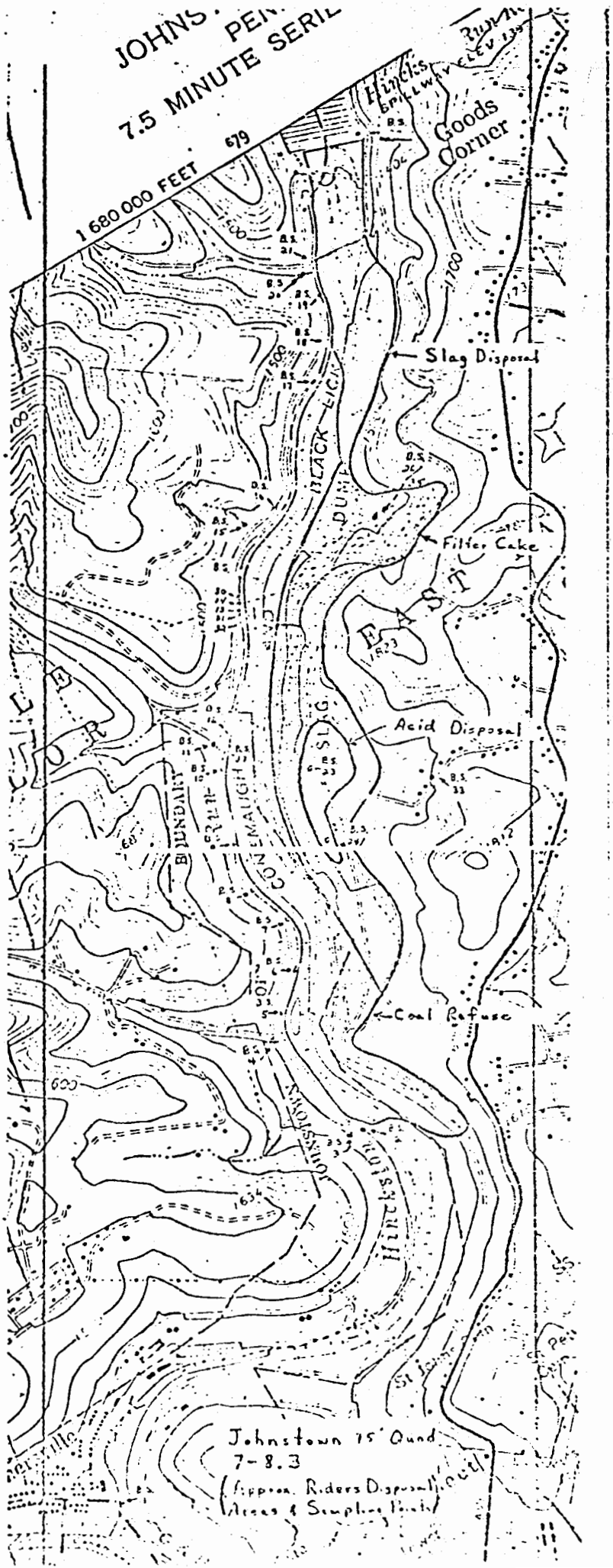
ORIGINAL
(Red)

PENNSYLVANIA
MENTAL RESOURCES
OLOGIC SURVEY

JOHNSTOWN QUADRANC
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGR



ORIGINAL



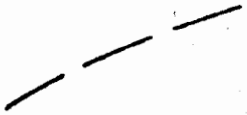

Map 2

PA-784 ORIGINAL (Red)

KEY

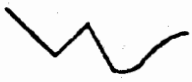
7.5 Minute Topographic Map


Strike and dip of bedrock strata



Approximate area of deep mining

Access road



Bethlehem property line

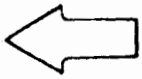
Approximate area for secure landfill

Water well

Spring

Test boring

Test pit



Groundwater flow direction

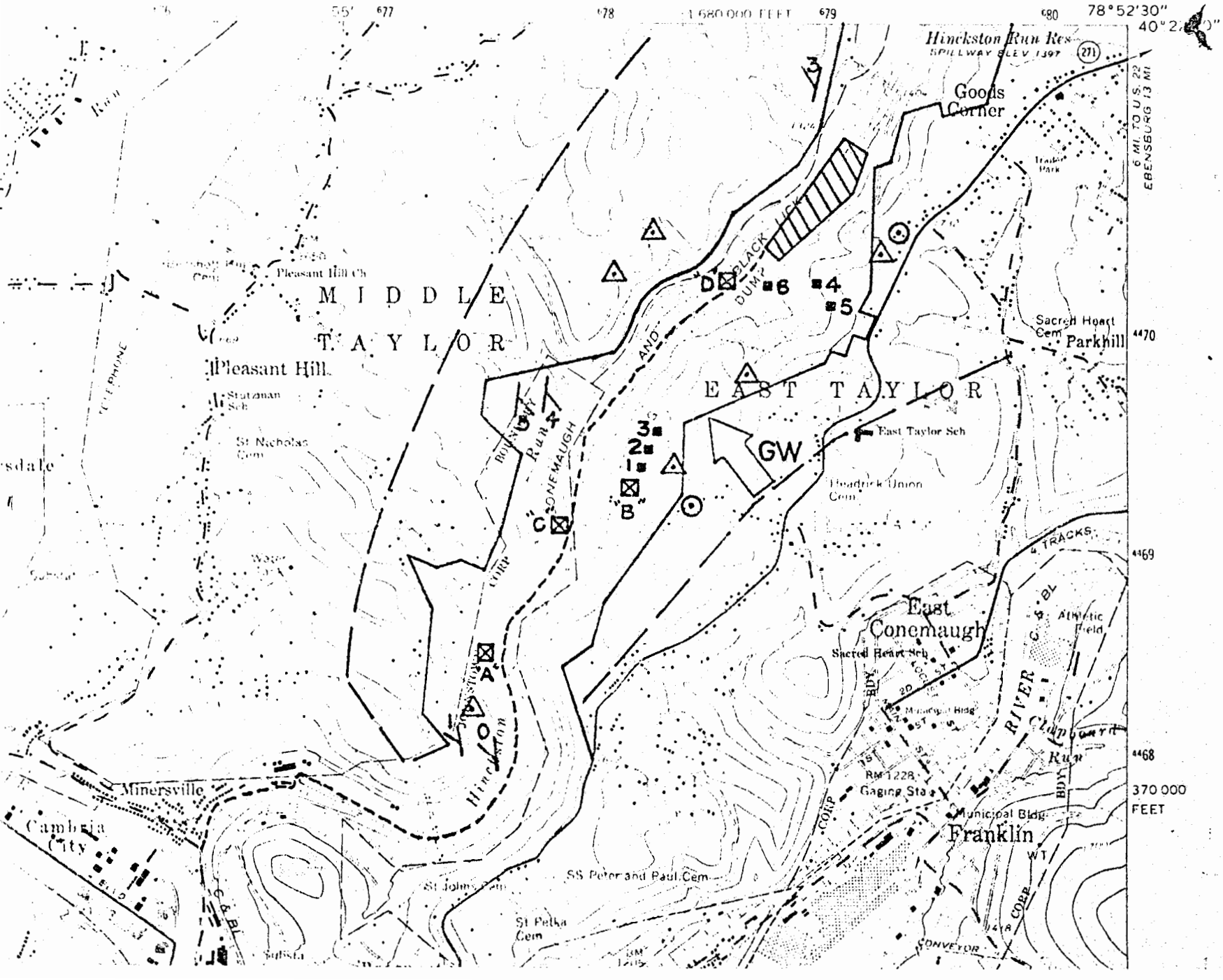
EXHIBIT XVI

EXHIBIT XVII

NNSYLVANIA
NTAL RESOURCES
OGIC SURVEY

JOHNSTOWN QUADRANGLE
PENNSYLVANIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

5264 IV NE
(NANTY GLO)




ORIGINAL
(Red)

ORIGINAL
(Red)
PA-784

# RIDERS DISPOSAL AREA
## RECORDED INVENTORY OF WASTE MATERIALS

A. Current Waste Materials - Nov. 12, 1976

1. Ferromanganese Blast Furnace

Gas Wash Water - Filter Cake Sludge

Production Rate: 10,000 T/Month

| Analysis | % Dry Basis |
|---|---|
| Ignition Loss | 25.0 |
| MnO | 22.8 |
| $SO_4$ | 5.8 |
| $SiO_2$ | 10.4 |
| CaO | 11.9 |
| $Al_2O_3$ | 8.9 |
| $Fe_2O_3$ | 2.0 |
| ZnO | 1.2 |
| MgO | 6.3 |
| $K_2O$ | 3.2 |
| $Na_2O$ | 0.7 |
| CN | 0.2 |
| % Moisture | 70% ± 5% |

2. Ferromanganese Blast Furnace Slag

Production Rate: 9,500 T/Month

| Analysis | % Dry Basis |
|---|---|
| $SiO_2$ | 24.3 |
| $Al_2O_3$ | 17.0 |
| CaO | 36.3 |
| MgO | 12.4 |
| MnO | 5.5 |
| S | 2.1 |
| $TiO_2$ | 0.45 |
| B/A | 2.0 |
| FeO | 0.5 |

3. Waste Acid

Production Rate: 14,150 T/Month (includes flushing water)

| Analysis | % |
|---|---|
| Free Acid ($CaCO_3$) | 3.3 |
| Total Iron (Fe) | 3.2 |

ORIGINAL
(Red)

# RIDERS DISPOSAL AREA
## RECORDED INVENTORY OF WASTE MATERIALS

(continued)

4. Solid Waste (brick, dirt, sinter waste, etc.)

   Production: 5,900 T/Month

5. Material stockpiled for recycling (Inventory to 8/31/76)

| | | |
|---|---|---|
| a. | FeMn flue dust | 4,800 Tons |
| b. | Basic iron filter cake and dust | 81,000 Tons |
| c. | Basic iron dust | 2,600 Tons |
| d. | Baghouse dust | 700 Tons |

6. Combustible Waste (paper)

   Flash Incineration by hot slag: 540 T/Month